Keeping the Books for Environmental Systems: Emergy Accounts for West Virginia

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Keywords: environmental accounting, emergy, West Virginia, environmental liabilities, collaborative research

Historically, questions related to environmental policies have been difficult to solve because solutions depend on accurately balancing the needs of both human and natural systems. Also, there has been no good way to express the socioeconomic and environmental effects of policies in common terms. The U.S. Environmental Protection Agency (U.S. EPA) has recognized that a knowledge gap exists in our ability to assess the effects of environmental policies using a comprehensive, integrated approach. Based on past studies, environmental accounting using emergy was identified as a method used by some scientists to bridge the gap. In September of 2001, a joint project between the Canaan Valley Institute (CVI), a private nonprofit corporation, and the ORD was begun to assess the environmental, social, and economic system in West Virginia and evaluate the integrated effects of environmental policies. In connection with this collaborative project and with the help of an Ecological Careers Organization intern, an emergy analysis of West Virginia was performed. This analysis provided an overview of the state and supplied key indices needed for the analysis of environmental problems. The emergy analysis shown in this poster is a product of this collaboration.

The accounts for environmental systems cannot be kept in dollars alone because environmental systems are based on the work of both humanity and of ecosystems, for which no money is paid. An accurate picture of environmental systems requires that we account for the flows and storages of energy, matter, and information that are responsible for supporting economic and social activities and that are not accompanied by flows of money. Energy can be used as a common denominator for quantifying all of these flows. Converting flows of energy to emergy puts the work done by the economy and the environment on the same scale. Markets only value a subset of the products and processes that are important in environmental systems. The key synthesis produced by emergy analysis is an accounting of social, economic, and environmental flows in common terms on an objective basis. Thus, for the first time, what is exported from West Virginia is seen in true relationship to what is received in return. Further development of the analysis methods and tools presented in this poster will make it possible for managers to first

examine complete and commensurate economic and environmental accounting data before making policy decisions about environmental systems.

This is an abstract of a proposed presentation and does not represent the official views of the Agency.